

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**

(11)Publication number : 2000-134531  
(43)Date of publication of application : 12.05.2000

|      |       |
|------|-------|
| H04N | 5/232 |
| H04N | 5/225 |

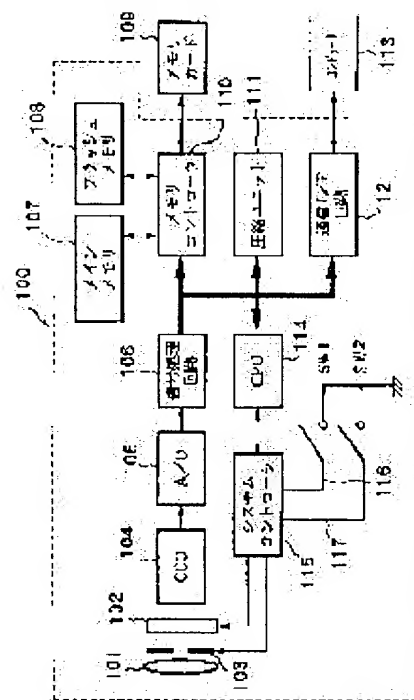
(71)Applicant : CANON INC

(72)Inventor : KOIDE YUJI

(57)Abstract:

**SOLUTION:** This device contains image picking up parts 101 to 105, a signal processing part 106 which converts an image signal outputted from the image picking up parts into digital image data, a transmission data generating part 107 which divides the digital image data into data of a prescribed size and generates plural transmission packets, switches SW1 and SW2 with which a user instructs a photographing preparation operation or a photographing operation, a controlling part 115 which interrupts the transmission of the transmission packets when the switches are operated in the middle of successively transmitting the plural transmission packets to the outside and controls

so as to continuously transmit untransmitted transmission packets among the plural transmission packets when the switch operation is finished and an interrupt signal outputting part 112 which transmits a signal showing that a transmission operation is in the middle of being interrupted to a computer 103 while the transmission of the transmission packets is interrupted.



[Date of sending the examiner's decision of rejection]

\* NOTICES \*

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates a picture signal to the image pick-up equipment which can be transmitted outside, its control approach, and a storage.

[0002]

[Description of the Prior Art] In image pick-up equipments, such as a digital camera, the picture signal photoed with image sensors, such as CCD, is changed into a digital image signal with an A/D converter and a signal-processing means. Compression processing of JPEG etc. is performed to this digital image signal with a compression means, and it is made an image file, and saves for record means, such as a memory card.

[0003]

[Problem(s) to be Solved by the Invention] By the way, image pick-up equipment and a computer may be connected by cables, such as RS232C and USB, and the image file saved at the memory card may be transmitted to a computer from image pick-up equipment.

[0004] In conventional image pick-up equipment, since priority was given to transmitting processing while having transmitted the image file, even if the user pushed the shutter, the trouble that a new image could not be photoed was immediately.

[0005] Therefore, this invention is made in view of the technical problem mentioned above, and the purpose is offering the image pick-up equipment which can photo a new image immediately with the photography directions from a user, its control approach, and a storage, also while having transmitted image data to the computer from image pick-up equipment.

[0006] Moreover, even if other purposes of this invention interrupt transmission of image data for photography of image pick-up equipment, they are offering the image pick-up equipment which a computer's does not judge that transmitting processing went wrong, its control approach, and a storage.

[0007] Moreover, the purpose of further others of this invention is offering the image pick-up equipment which can photo a new image immediately with photography directions, its control approach, and a storage without needing excessive memory.

[0008] Moreover, the purpose of further others of this invention is offering the image pick-up equipment which can resume transmission from the interrupted data, its control approach, and a storage, without retransmitting from the beginning of image data, in case transmission of image data is interrupted by photography and transmission is resumed after that by it.

[0009]

[Means for Solving the Problem] In order to solve the technical problem mentioned above and to attain the purpose, the image pick-up equipment concerning this invention An image pick-up means to picturize a photographic subject and to output a picture signal, and a signal-processing means to change into digital image data the picture signal outputted from this image pick-up means, A transmit data generation means to divide said digital image data into the data of predetermined magnitude, and to generate two or more transmitting packets about each divided data, One by one, when said input means

is operated while transmitting outside, an input means by which a user directs photography housekeeping operation or photography actuation, and said two or more transmitting packets When transmission of said transmitting packet is interrupted and actuation of said input means is completed The control means controlled to continue the transmitting packet which is not transmitted of said two or more transmitting packets, and to transmit, It is characterized by providing a suspend signal output means to transmit the signal which shows that a send action is being interrupted during interruption of transmission of said transmitting packet to the transmitting phase hand of said image data.

[0010] Moreover, an image pick-up means for the image pick-up equipment concerning this invention to picturize a photographic subject, and to output a picture signal, A signal-processing means to change into digital image data the picture signal outputted from this image pick-up means, The memory for photography which holds said digital image data temporarily during photography processing, A record means to record said digital image data, an input means by which a user directs photography housekeeping operation or photography actuation, and when a Request to Send comes from the exterior In the transmitting packet which divided into the data of predetermined magnitude the image data read from said memory for photography, or said record means In or the time of providing a transmitting means to transmit one showing transmission not being ready of the transmitting preparation non-completed signals, and having not received directions of the photography preparation from a user, or directions of photography And when omitting photography processing and the Request to Send from the outside comes When transmitting outside the transmitting packet created from the digital image data held at said memory or said record means and having received directions of the photography preparation from a user, or directions of photography, Or while performing photography processing, when the Request to Send from the outside comes, it is characterized by transmitting transmitting preparation a non-completed signal.

[0011] Moreover, in the image pick-up equipment concerning this invention, it has the memory for transmit data expansion which is the memory for developing digital image data temporarily for transmission. And when directions of the photography preparation from a user or directions of photography is received in the condition of having shared this memory for transmit data expansion, and said memory for photography, and having secured said memory for transmit data expansion, It is characterized by opening the memory for transmit data expansion wide, and securing the memory for photography.

[0012] Moreover, in the image pick-up equipment concerning this invention, when having transmitted digital image data outside When directions of the photography preparation from a user or directions of photography is received, the amount of the transmitting packet which transmission completed at the time is memorized. It is characterized by carrying out sequential transmission from a non-transmitted transmitting packet to the Request to Send from the outside which came after it opened said memory for transmit data expansion wide, and the photography directions from a user performed photography processing, securing the memory for transmit data expansion again after that and completing transmitting preparation.

[0013] Moreover, in the image pick-up equipment concerning this invention, when it notifies outside that it is [ photography ] under preparation when directions of the photography preparation from a user are received and is [ photography ] under processing in response to directions of the photography from a user, it is characterized by notifying outside that it is [ photography ] under processing.

[0014] Moreover, in the image pick-up equipment concerning this invention, when new digital image data or the compressed image data is created by photography, it is characterized by notifying having created new image data outside.

[0015] Moreover, the control approach of the image pick-up equipment concerning this invention An image pick-up means to picturize a photographic subject and to output a picture signal, and a signal-processing means to change into digital image data the picture signal outputted from this image pick-up means, A transmit data generation means to divide said digital image data into the data of predetermined magnitude, and to generate two or more transmitting packets about each divided data, Are the control approach of image pick-up equipment of providing an input means by which a user directs photography

housekeeping operation or photography actuation, and one by one, when said input means is operated while transmitting outside, said two or more transmitting packets When transmission of said transmitting packet is interrupted and actuation of said input means is completed It is characterized by providing the suspend signal output process of transmitting the signal which shows the transmitting process which continues the transmitting packet which is not transmitted of said two or more transmitting packets, and is transmitted, and that a send action is being interrupted during interruption of transmission of said transmitting packet to the transmitting phase hand of said image data.

[0016] Moreover, the control approach of the image pick-up equipment concerning this invention An image pick-up means to picturize a photographic subject and to output a picture signal, and a signal-processing means to change into digital image data the picture signal outputted from this image pick-up means, The memory for photography which holds said digital image data temporarily during photography processing, a record means to record said digital image data, an input means by which a user directs photography housekeeping operation or photography actuation, and when a Request to Send comes from the exterior In the transmitting packet which divided into the data of predetermined magnitude the image data read from said memory for photography, or said record means By or the time of being the control approach of image pick-up equipment of providing a transmitting means to transmit one showing transmission not being ready of the transmitting preparation non-completed signals, and having not received directions of the photography preparation from a user, or directions of photography And when omitting photography processing and the Request to Send from the outside comes When transmitting outside the transmitting packet created from the digital image data held at said memory or said record means and having received directions of the photography preparation from a user, or directions of photography, Or while performing photography processing, when the Request to Send from the outside comes, it is characterized by transmitting transmitting preparation a non-completed signal.

[0017] In the control approach of the image pick-up equipment concerning this invention moreover, said image pick-up equipment It has the memory for transmit data expansion which is the memory for developing digital image data temporarily for transmission. And when directions of the photography preparation from a user or directions of photography is received in the condition of having shared this memory for transmit data expansion, and said memory for photography, and having secured said memory for transmit data expansion, It is characterized by opening the memory for transmit data expansion wide, and securing the memory for photography.

[0018] Moreover, in the control approach of the image pick-up equipment concerning this invention, when having transmitted digital image data outside When directions of the photography preparation from a user or directions of photography is received, the amount of the transmitting packet which transmission completed at the time is memorized. It is characterized by carrying out sequential transmission from a non-transmitted transmitting packet to the Request to Send from the outside which came after it opened said memory for transmit data expansion wide, and the photography directions from a user performed photography processing, securing the memory for transmit data expansion again after that and completing transmitting preparation.

[0019] Moreover, in the control approach of the image pick-up equipment concerning this invention, when it notifies outside that it is [ photography ] under preparation when directions of the photography preparation from a user are received and is [ photography ] under processing in response to directions of the photography from a user, it is characterized by notifying outside that it is [ photography ] under processing.

[0020] Moreover, in the control approach of the image pick-up equipment concerning this invention, when new digital image data or the compressed image data is created by photography, it is characterized by notifying having created new image data outside.

[0021] Moreover, an image pick-up means for the storage concerning this invention to picturize a photographic subject, and to output a picture signal, A signal-processing means to change into digital image data the picture signal outputted from this image pick-up means, A transmit data generation means to divide said digital image data into the data of predetermined magnitude, and to generate two or

more transmitting packets about each divided data, It is the storage which memorized the control program for controlling the image pick-up equipment possessing an input means by which a user directs photography housekeeping operation or photography actuation. One by one, when said input means is operated while transmitting outside, said control program said two or more transmitting packets When transmission of said transmitting packet is interrupted and actuation of said input means is completed The code of the transmitting process which continues the transmitting packet which is not transmitted of said two or more transmitting packets, and is transmitted, It is characterized by providing the code of the suspend signal output process of transmitting the signal which shows that a send action is being interrupted during interruption of transmission of said transmitting packet to the transmitting phase hand of said image data.

[0022] Moreover, an image pick-up means for the storage concerning this invention to picturize a photographic subject, and to output a picture signal, A signal-processing means to change into digital image data the picture signal outputted from this image pick-up means, The memory for photography which holds said digital image data temporarily during photography processing, a record means to record said digital image data, an input means by which a user directs photography housekeeping operation or photography actuation, and when a Request to Send comes from the exterior In the transmitting packet which divided into the data of predetermined magnitude the image data read from said memory for photography, or said record means Or it is the storage which memorized the control program for controlling the image pick-up equipment possessing a transmitting means to transmit one showing transmission not being ready of the transmitting preparation non-completed signals. When said control program has not received directions of the photography preparation from a user, or directions of photography, and when the Request to Send from the outside comes when omitting photography processing When having received the code of the process which transmits outside the transmitting packet created from the digital image data held at said memory or said record means, directions of the photography preparation from a user, or directions of photography, Or while performing photography processing, when the Request to Send from the outside comes, it is characterized by providing the code of the process which transmits transmitting preparation a non-completed signal.

[0023]

[Embodiment of the Invention] Hereafter, 1 suitable operation gestalt of this invention is explained to a detail with reference to an accompanying drawing. Drawing 1 is the block diagram showing the configuration of the image pick-up equipment 100 concerning 1 operation gestalt of this invention.

[0024] 116 and 117 express with drawing 1 the switches SW1 and SW2 interlocked with the shutter release, respectively. If a user changes a shutter release into a half-push condition, SW1 will be turned on and image pick-up equipment will go into photography housekeeping operation. In photography housekeeping operation, AE actuation and AF actuation are performed and it prepares for photography. If a user pushes in a shutter release, SW2 will be turned on and actual photography actuation will be performed. In photography actuation, photo electric conversion of the photographic subject image incorporated by passing a lens 101, diaphragm 103, and a shutter 102 first is carried out by CCD104, and it is changed into a digital image signal by A/D converter 105 and the digital disposal circuit 106. A digital image signal is once incorporated by main memory 107 through the memory controller 110. The digital image signal incorporated by main memory 107 is incorporated by the compression unit 111 as a file in response to compression processing of JPEG etc. at a memory card 109. Memory cards 109 are the body 100 of image pick-up equipment, and a removable record medium.

[0025] It is photography actuation of a single string [ incorporate / an image file / from the condition from which SW2 was turned on / by the memory card 109 ].

[0026] In addition, a flash memory 108 is the memory for being built in the body 100 of image pick-up equipment, and memorizing an image file like a memory card 109. Moreover, the system controller with which 115 controls the whole image pick-up equipment, and 114 are CPUs.

[0027] On the other hand, a computer is connected to the communication link interface circuitries 112, such as RS232C and USB, through a data communication cable. The same communication link I/F circuit also as a computer side is built in. By connecting a computer and image pick-up equipment, the

image file incorporated by the memory card of image pick-up equipment can be transmitted to a computer.

[0028] Image pick-up equipment and a computer communicate by exchanging Message. Drawing 5 expresses the configuration of Message exchanged by the communication link between image pick-up equipment and a computer. One Message consists of Message Size showing the size of the whole Message including Message ID which consists of 4Byte(s), and Message ID which consists of 4Byte, and a parameter of Message. There are some which do not have a parameter depending on the class of Message.

[0029] Drawing 6 expresses the class of Message. REQ\_EVENT is Message transmitted to image pick-up equipment from a computer, and requires acquisition of the contents of the event produced with image pick-up equipment. REQ\_DATA is Message transmitted to image pick-up equipment from a computer, and requires transmission of the packet created from the image file currently recorded on the memory card of image pick-up equipment. WAIT\_DATA is Message transmitted to a computer from image pick-up equipment, and it tells that preparation of transmission of the packet created from an image file to REQ\_DATA Message is not completed yet.

[0030] REPLY\_DATA is Message transmitted to a computer from image pick-up equipment, to REQ\_DATA Message, divides image data in the magnitude of a maximum of 64 Byte(s) from an image file, and transmits it as a parameter. NO\_EVENT is Message transmitted to a computer from image pick-up equipment, and it tells that the event has not occurred with image pick-up equipment to REQ\_EVENT Message.

[0031] SW1\_ON\_EVENT is Message transmitted to a computer from image pick-up equipment, and it tells that SW1 was pushed with image pick-up equipment to REQ\_EVENT Message. SW2\_ON\_EVENT is Message transmitted to a computer from image pick-up equipment, and it tells that SW2 was pushed with image pick-up equipment to REQ\_EVENT Message. NEW\_FILE\_EVENT is Message transmitted to a computer from image pick-up equipment, and it tells that a new image file was created by having taken a photograph with image pick-up equipment to REQ\_EVENT Message. This Message is made into a trigger and processing of incorporating the image file by which the computer was created newly from image pick-up equipment is attained.

[0032] In order to transmit an image file to a computer, it is repeated to REQ\_DATA Message transmitted from a computer until the actuation whose image pick-up equipment transmits REPLY\_DATA Message to a computer is sent in the one whole image file. Therefore, with image pick-up equipment, if REQ\_DATA Message is received from a computer, the image file which secured the buffer area which develops an image file for transmission into main memory 107, and read it from the memory card 109 to the secured field will be developed. The image file furthermore read is divided into the packet of the magnitude of 64Byte(s). When the Byte number of the whole image files cannot divide among 64Byte(s), the last packet serves as too much Byte number which broke the Byte number of image files by 64Byte(s).

[0033] WAIT\_DATA Message can be automatically transmitted to a computer by hardware by setting to the case in the condition that REPLY\_DATA Message which image pick-up equipment creates from an image file cannot be prepared to REQ\_DATA Message from a computer, beforehand to a communication link interface. Even when REPLY\_DATA Message is not sent by this, a computer continues without judging it as a communication link error, and continues taking out REQ\_DATA Message to image pick-up equipment by it. Moreover, image pick-up equipment can concentrate on processings other than transmission of image data.

[0034] When it is in the condition which is ready for REPLY\_DATA Message with image pick-up equipment, REPLY\_DATA Message created from the image file is sent to REQ\_DATA Message sent from a computer. In a computer side, an image file can be again created by connecting the parameter part of REPLY\_DATA Message sent one by one.

[0035] Drawing 2 is the flow chart which showed the relation of communication link actuation of image pick-up equipment, and photography actuation in this operation gestalt.

[0036] With the image pick-up equipment of this operation gestalt, even if it is among transfer operation



about image data at a computer, when a user pushes a shutter, it is characterized by the ability to photo an image quickly. Therefore, the event of whether SW1 and SW2 were pushed is detected every 100ms also by the longest.

[0037] Therefore, in case an image file is transmitted to a computer from image pick-up equipment, an image file is divided and magnitude of `REPLY_DATA` Message is made sufficiently small. For example, although the shortest will also require the time amount for 21.3s if it is going to transmit 100 K bytes of image file continuously by the means of communications of RS232C of transmission-speed 38.4kbps. If this is divided into the packet of 1 64Byte(s), since the number of packets will become 1600 pieces and the magnitude of each `REPLY_DATA` Message will be set to 72Byte(s), Time amount required for a transfer of one `REPLY_DATA` Message is set to 18.75ms, and becomes short to extent permissible compared with spacing of event detection of SW1 and SW2.

[0038] Moreover, the condition of calling it Mode inside is managed with this image pick-up equipment. image pick-up equipment is a photography preparatory state, or is a photography processing state -- etc. -- it becomes Mode=M1 in the condition that `REPLY_DATA` Message cannot be transmitted to `REQ_DATA` Message from a computer. On the other hand, image pick-up equipment secured the memory area for transmission in main memory, has read image data transmission to the memory area, and it becomes Mode=M2 in the condition that `REPLY_DATA` Message can be transmitted to `REQ_DATA` Message from a computer.

[0039] Even if it sets it as Mode=M1 at step S202 first and `REQ_DATA` Message from a computer comes by drawing 2, since it is not ready, with image pick-up equipment, `WAIT_DATA` Message is set up to a communication link interface so that it may answer automatically by hardware.

[0040] Next, when SW1 is seen whether pushed at step S203 and SW1 is pushed, it sees whether it is current Mode=M2 at step S204. In an initial state, since it is Mode=M1, it progresses to step S207, and is set as Mode=M1, and photography preparations of AF (automatic focus), AE (automatic exposure), etc. are made.

[0041] Next, SW2 is seen whether pushed at step S208. If SW2 is pushed, a photograph will be taken at step S209. On the other hand, when SW2 is not pushed at step S208, SW1 is seen whether still again pushed at step S203. After performing photography of step S209 when SW1 is not pushed or, `REQ_DATA` Message from a computer is seen whether coming by step S210.

[0042] When `REQ_DATA` Message is coming by step S210 from the computer, it sees whether it is current Mode=M2 at step S211. When not set as present Mode=M2, `REPLY_DATA` Message cannot be transmitted to `REQ_DATA` Message from a computer, but `WAIT_DATA` Message is automatically transmitted by hardware. Then, in order to prepare transmission, it is first set as Mode=M2 at step S212, and the memory area for transmission is secured. Furthermore, at step S213, the transmitting packet for un-transmitting is read to the secured memory area, and transmitting preparations are made. And a `WAIT_DATA` setup previously set up at step S214 is canceled.

[0043] Transmission of `REPLY_DATA` Message is performed by this at step S215 to `REQ_DATA` Message from the following computer.

[0044] It is step S211, and when already set as Mode=M2, `REPLY_DATA` Message is similarly transmitted to a computer at step S215.

[0045] Transmitting `REPLY_DATA` Message, when there is no SW1 input from a user is continued to `REQ_DATA` Message from a computer by repeating steps S203, S210, S211, and S215.

[0046] When omitting photography processing and `REQ_DATA` Message from a computer comes by this image pick-up equipment at the same time it uses it as a field for incorporating the image data which photoed main memory 107, it is used also as a buffer for developing an image file for transmission. For this reason, the excessive memory which develops an image file for transmission is not needed.

[0047] On the other hand, drawing 3 is the flow chart which showed the communication link actuation by the side of the computer at the time of a computer gaining one image file from image pick-up equipment in this operation gestalt.

[0048] Counter n is first set as 0 by S302. If Counter n has counted the number with which `WAIT_DATA` Message has been sent continuously from image pick-up equipment and this number



becomes a specific value, it will stop judging it as communication link failure and a computer taking out REQ\_DATA Message to image pick-up equipment.

[0049] Next, REQ\_DATA Message is transmitted to image pick-up equipment from a computer at step S303.

[0050] When REPLY\_DATA Message has been sent from image pick-up equipment to REQ\_DATA Message, it judges whether REPLY\_DATA Message for one image file has been sent at step S308. When not fulfilling one image file, REQ\_DATA Message is again transmitted at step S303. Processing is ended when REPLY\_DATA Message has been sent by one image file.

[0051] On the other hand, when REPLY\_DATA Message is not sent from image pick-up equipment at step S304, WAIT\_DATA Message is seen whether sent from image pick-up equipment at step S305.

[0052] When WAIT\_DATA Message has been sent, one counter n is incremented (step S306), and REQ\_DATA Message is again transmitted at step S303.

[0053] When Counter n reaches the value N defined beforehand when WAIT\_DATA Message is not sent from image pick-up equipment at step S305 and (step S307 Yes), it judges that gaining one image file from image pick-up equipment went wrong at step S310, and ends at step S311.

[0054] In this case, it processes notifying a user of file acquisition having gone wrong on the screen of a computer etc.

[0055] Drawing 4 is drawing which wrote together the relation of communication link actuation of image pick-up equipment, image pick-up actuation, and communication link actuation of a computer on the time-axis. It has become in the direction in which time amount passes, so that it goes by drawing 4 downward.

[0056] While image pick-up equipment is performing photography preparation and photography processing by drawing 4, image pick-up equipment transmits WAIT\_DATA Message to REQ\_DATA Message from a computer. On the other hand, when image pick-up equipment omits photography preparation and photography processing, image pick-up equipment transmits REPLY\_DATA Message made from image data to REQ\_DATA Message from a computer.

[0057] Moreover, with this image pick-up equipment, the condition of image pick-up equipment can be returned to a computer from a computer to REQ\_EVENT Message sent periodically. By drawing 4, when SW2 is pushed with image pick-up equipment, image pick-up equipment has transmitted SW2\_ON\_EVENT Message to REQ\_EVENT Message. Moreover, if photography processing is completed, NEW\_FILE\_EVENT Message will be transmitted to REQ\_EVENT Message.

[0058] Even when WAIT\_DATA Message is transmitted for a long time by resetting the counter n of drawing 3 to 0 when SW1\_ON\_EVENT Message and SW2\_ON\_EVENT Message have been transmitted to REQ\_EVENT Message, it stops judging that acquisition of an image file went wrong by computer.

[0059]

[Other operation gestalten] Moreover, it cannot be overemphasized by the purpose of this invention supplying the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage that it is attained.

[0060] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention.

[0061] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.

[0062] Moreover, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that OS (operating system) which is working on a computer is actual, based on directions of the program code, and the function of the operation gestalt mentioned above by performing the program code which the computer read is not only

realized, but was mentioned above by the processing is realized.

[0063] Furthermore, after the program code read from a storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or a computer is equipped, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that CPU with which the functional add-in board and functional expansion unit are equipped based on directions of the program code is actual, and mentioned above by the processing is realized.

[0064]

[Effect of the Invention] As explained above, also while having transmitted image data to the computer from image pick-up equipment according to this invention, a new image can be immediately photoed with the photography directions from a user.

[0065] Moreover, even if it interrupts transmission of image data for photography of image pick-up equipment by transmitting transmitting preparation a non-completed signal to the Request to Send from a computer, a computer can be prevented from judging that transmitting processing went wrong.

[0066] Moreover, a new image can be immediately photoed with photography directions without needing excessive memory for image pick-up equipment.

[0067] Moreover, transmission can be resumed from the interrupted data, without retransmitting from the beginning of image data.

[0068] Moreover, even if it interrupts transmission of image data for photography of image pick-up equipment, a computer can be prevented from judging that transmitting processing went wrong.

[0069]

---

[Translation done.]

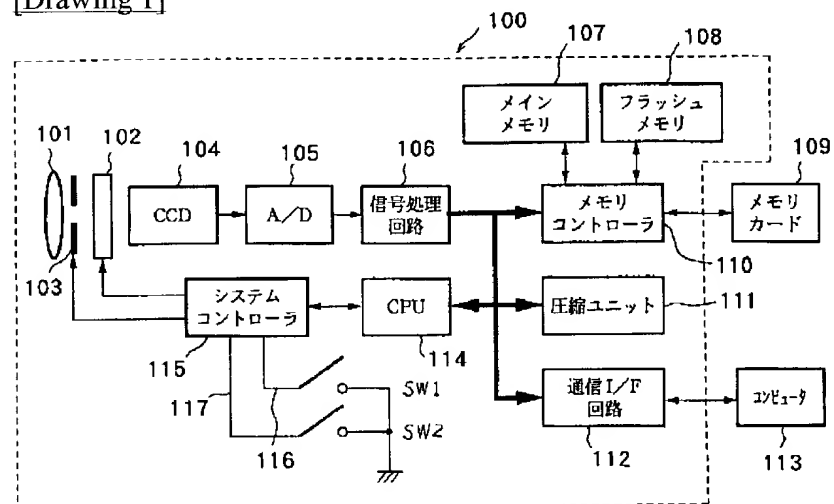
## \* NOTICES \*

Japan Patent Office is not responsible for any damages caused by the use of this translation.

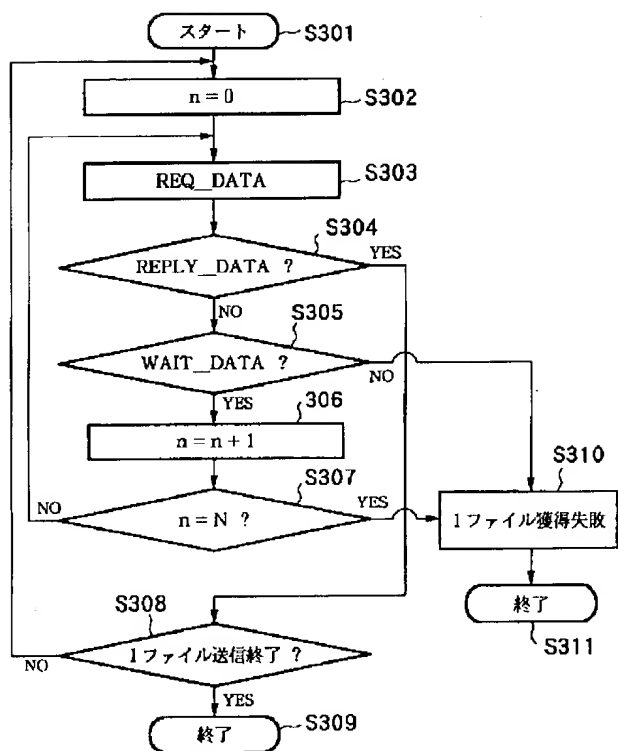
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

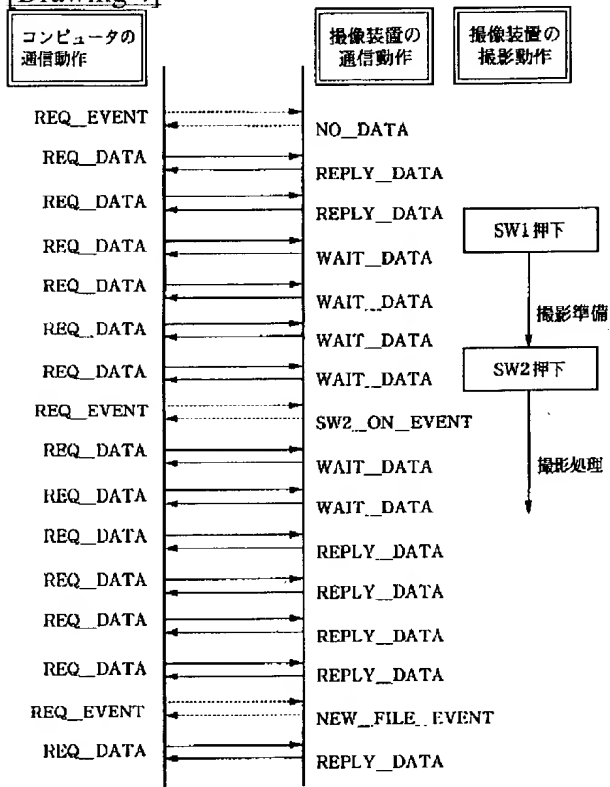
[Drawing 1]



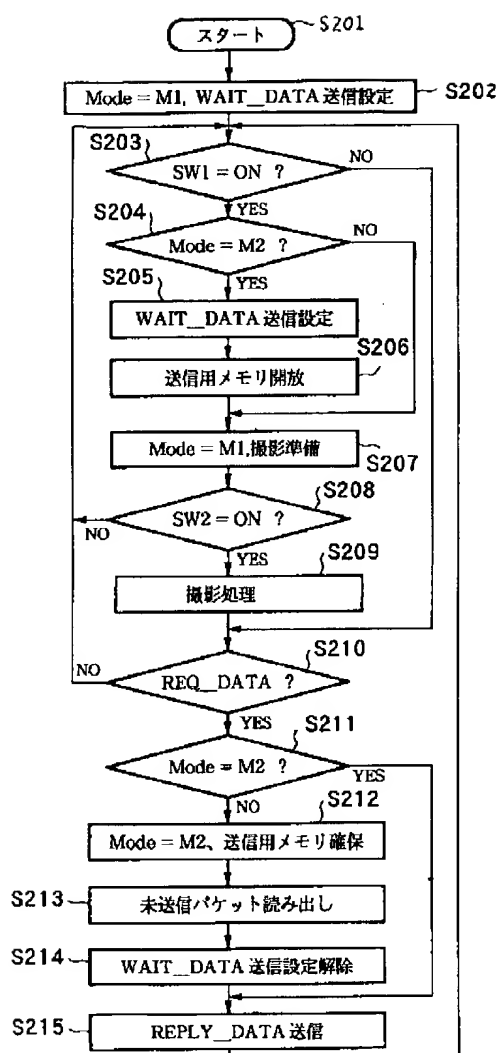
[Drawing 3]



[Drawing 4]



[Drawing 2]



[Drawing 5]

| 構成要素         | サイズ (Byte)       | 構成要素の意味                        |
|--------------|------------------|--------------------------------|
| Message ID   | 4                | Message の識別子                   |
| Message Size | 4                | Message ID を含めた Message 全体のサイズ |
| パラメータ        | Message Size - 8 | Message のパラメータ                 |

[Drawing 6]

| Message ID     | パラメータ<br>(サイズ)       | 送信元    | Message の意味   |
|----------------|----------------------|--------|---|
| REQ_EVENT      | なし                   | コンピュータ | コンピュータから撮像装置に対する<br>イベントの取得の要求  |
| REQ_DATA       | なし                   | コンピュータ | コンピュータから撮像装置に対する<br>画像データパケットの送信要求                                      |
| WAIT_DATA      | なし                   | 撮像装置   | REQ_DATAに対して画像データパケットの<br>送信準備が完了していないことを、<br>撮像装置からコンピュータに知らせる         |
| REPLY_DATA     | 画像データ<br>(Max64Byte) | 撮像装置   | REQ_DATAに対して画像データから<br>作ったパケットを、撮像装置からコンピュータに<br>送信する                   |
| NO_EVENT       | なし                   | 撮像装置   | REQ_EVENTに対して、イベントが<br>発生していないことを撮像装置から<br>コンピュータに知らせる                  |
| SW1_ON_EVENT   | なし                   | 撮像装置   | REQ_EVENTに対して、SW1が<br>押されたことを撮像装置から<br>コンピュータに知らせる                      |
| SW2_ON_EVENT   | なし                   | 撮像装置   | REQ_EVENTに対して、SW2が<br>押されたことを撮像装置から<br>コンピュータに知らせる                      |
| NEW_FILE_EVENT | なし                   | 撮像装置   | REQ_EVENTに対して、撮像装置での<br>撮影によって新しいファイルが作成<br>されたことを撮像装置から<br>コンピュータに知らせる |

---

[Translation done.]